Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6, 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furubayashi (US 6,427,455 B1). Furubayashi discloses a cooling device comprising a cooler provided in an interior that is insulated adiabatically from an exterior, a cooling fan (8a) disposed on a front surface of the cooler (7), and a cooling chamber that is defined by a space in front of the cooling fan (8a) and in which an object (38) to be cooled is placed, the cooling device drawing cooled air (see arrow) behind the cooling fan (8a) with the fan and allowing the cooled air to flow into the cooling chamber, wherein a/D = 1/2 to I/4 is satisfied, where a indicates a dimension of a first gap between the cooler (7) and the cooling fan (8a) along a front-back direction and D indicates a diameter of the cooling fan, a dimension of a second gap (13) between the cooler (7) and a wall surface on a back surface side of the cooler (7) is set to be larger than 50 mm, (see column 8, lines 35-39, the range being between 20-50 mm is near to larger than 50mm which is obvious) and an air pressure at a point located I00 mm forward of a point of rotational center of the cooling fan is allowed to oscillate or pulse by adjusting a number of revolutions of the cooling fan (8a) (being functional recitation of function of the fan to create such pressure, the fan of Furubayashi is

capable to create such pressure). Regarding, installation of fan by setting a distance with respect to the diameter of the fan as (a/D =1/2 to ¼) is nothing but rearranging parts or reorganizing it. Since it has been held that rearranging parts of an invention involves only routine skill in the art. (See In re Japikse, 86USPQ 70).

Further, it is mention that a change in size (varying the distance of "a" with respect fan diameter "D") is generally reorganized as being within the level of an ordinary skill in the art. In re Rose, 105 USPQ 237 (8-9, 27-28,33 and 38 CCPA 1995). Form the above; it is evident that the above claims are obvious over Furubayashi.

Further, it is mentioned that Furubayashi discloses similar ratio of a/D, may be exactly the same ratio or a very close to the ratio of claimed invention because Furubayashi already disclose the distance between the back surface of cooler (7) and the wall surface is 50 mm which is very close to the dimension of claimed invention and Figs of Furubayashi is also almost same as the Figs of the Applicants. However, Applicants may set the said ratios and distance to obtain optimum values. It is further mentioned that it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272,205 USPQ 215 (CCPA 1980).

In view of the above, the claims 1-6 and 8-12 are obvious over Furubayashi.

Regarding claim 1, the above disclose obviously meets the limitations of claim 1.

Regarding claim 2, the contents of the claim 2 is the function recitation of the function of fan set at a particular speed which can be done by an ordinary skill of art

since it falls within the ream of rearranging parts; an ordinary skill of art is able to do it because it involves only a routine skill in the art as mentioned above.

Regarding claim 3, the recitation, “the number of revolutions of the cooling fan is adjusted so that resonance occurs in the pressure oscillation or pressure pulsation when the dimension a is varied “is the functional recitation of functions of fan on a varying distance a from the evaporator surface. Adjusting the distance of a fan from its evaporator surface is only routine skill of art and can be done by an ordinary skill of art as explained above.

Regarding claim 4, Furubayashi discloses that a lateral surface of the cooler (50b/33) is covered with a control plate so as to prevent substantially air from moving in and out through the lateral surface of the cooler (50b/33). See Figs 5 and 11.

Regarding claim 5, the number of revolution of cooling fan of Furubayashi is adjustable because this feature is well within the knowledge of an ordinary skill of art.

Regarding claim 6, the number of revolution per minute is an well known feature in the art and ordinary skill of art is able to adjust or fix any number of revolution per minute including 1200 to 2100 rpm. The adjusting rpm of a fan is also involves only routine skill of in the art.

Regarding claim 8, Furubayashi discloses that the plurality of the coolers are present, the coolers are provided so as to face each other with the cooling chamber interposed there between, and the cooling fans provided respectively on the front surfaces of the facing coolers are offset so as not to face each

other (See Figs 4, 5 and 9..

Regarding claim 9, Furubayashi discloses that a number of the cooling fans provided on the front surface of the cooler is more than one, and when the front surface of the cooler is divided virtually into a plurality of blocks, the cooling fans are arranged on the front surface corresponding to blocks selected in a staggered manner. See Figs 4, 5 and 9.

Regarding claim 10, the disclosure, “a rotation of the cooling fan is set to be counterclockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere” is related with a natural phenomena and the same feature is true for each and every fan including the fan of Furubayashi. Also setting a fan in a clockwise or counterclockwise is only routine skill in the art.

Regarding claim I1, the disclosure, “both of a maximal value of a frequency (Hz) of the pressure oscillation or pressure pulsation and a maximal value of an amplitude relative to pressure (T/Pave) are present in a vicinity of a/D= ¼” can be achieved by an ordinary skill of art with the teaching of the Furubayashi by trying with different fan capacity.

Regarding claim I2, Furubayashi discloses that the cooling device is a sealed interior cooling device, a spiral freezer cooling device provided with a conveyor for conveying the object to be cooled spirally or a tunnel freezer cooling device provided with a conveyor for conveying the object to be cooled horizontally. See Fig. 4.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Furubayashi in view of Symko et al (US 6,574,968). Furubayashi discloses the invention substantially as claimed as stated above except vibration driving portion. Symko et al teach the use of vibration driver (18) in a refrigeration system for the purpose of optimizing the efficiency of a refrigerator by reducing the size of the refrigerator. See abstract and first few lines of the background. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cooling device/refrigerator of Furubayashi in view of Symko et al such that a vibration driver could be provided in order to maximize the efficiency of the refrigerator.

Response to Arguments

Applicant's arguments filed 07/22/09 have been fully considered but they are not persuasive. The Applicants ague that Furubayashi does not teach or suggest these features. First, Fumbayashi teaches maintaining the clearance 13 between the rear of the cooling coil 7 and the rear wall between 20-50 ram, as anything larger than 50 mm is excessively large and will cause the cold air to diffuse in the clearance 14 and thereby prevent adequate introduction of cool air to the rear of the cooling fan 8a (see column 8,

lines 31-39 of Furubayashi). thus, Furubayashi explicitly teaches away from having the clearance 13 larger than 50 mm.

Accordingly, it would not be obvious to one skilled in the art to modify the configuration of Furubayashi to teach that a dimension of a second gap between the cooler and a wall surface on a back surface side of the cooler is set to be larger than 50 ram, as recited in claim 1.

The Examiner disagrees. Furubayashi discloses when the clearance 13 is excessively small, sufficient volume of cold air cannot be sucked. However, when it is excessively large, the cold air defuse in the clearance 13. From the above, a slight variance of distance from20- 50 mm to 20- 5.05 mm will make a discrepancy and unworkable situation to Furubayashi device. It further indicates, from the disclosure of the Furubayashi that for a particular fan and a particular fan speed the above disclosure is valid. In case the fan dimension and the fan speed are different the, dimension of clearance can be varied with longer clearance than 20 mm-50 mm. In both the case as explained above the Furubayashi reference is obvious to the claimed invention because it is a matter of optimization of a known basic aspect of a device.

It is mentioned that it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272,205 USPQ 215 (CCPA 1980).

The Applicants further argue that second, nowhere does Furubayashi teach or suggest that the equation, a/d = 1/2

to 1/4 is satisfied, where a indicates a dimension of a first gap between the cooler and

the cooling fan along a front-back direction and D indicates a diameter of the cooling fan. The rejection asserts that these features are merely rearranging or reorganizing parts and within the level of ordinary skill in the art. However, an advantage of these features is that the proper air flow within the cooling device can be maintained. In contrast,

Furubayashi teaches controlling air flow passing through the inside of the cooling coil 7 via the clearance 13, by setting the clearance I3 to be between 20 mm and 50 mm (see column 8, lines 21-39 and Figure 3 of Furubayashi). Accordingly, the configuration of Fumbayashi does not allow one skilled in the art to contemplate modifying Furubayashi to ensure that the equation, a/D = 1/2 to 1/4 is satisfied, where a indicates a dimension of

a first gap between the cooler and the cooling fan along a front-back direction mad D indicates a diameter of the cooling fan, as recited in claim 1.

Third, nowhere does Furubayashi teach or suggest an air pressure at a point located 100 mm forward of a point of rotational center of the cooling fan is allowed to oscillate or pulse by adjusting a rate of revolutions of the cooling fan. An average of these features combined with the features that recite the equation a/D = 1/2 to 1/4 is satisfied is that a flow ~t, moving around both of the lateral surfaces and the back surface

of the cooler, and a flow 13, passing across the front surface of the cooler, maintain a

The Examiner disagrees. The basic concept of finding an optimum clearance of 20 mm-50 mm has been established by Furubayashi by using a particular fan and fan capacity.

It is common scène that this clearance dimension can be changed by using a different fan with higher fan capacity. Which is nothing but an optimization of a known basic aspect of Furubayashi.

It is again mentioned that it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272,205 USPQ 215 (CCPA 1980).

Response to Arguments

Applicant's arguments filed 02/10/10 have been fully considered but they are not persuasive. The Applicants argue that Furubayashi does not teach or suggest the feature of a/D =1/2 to ¼ is satisfied so that an air flow is generated that comes from a side of cooling chamber, moves around both lateral surfaces and back surface of the cooler, and flows into the cooling chamber. The examiner disagrees. Furubayashi discloses a structure substantially similar structure of the claimed invention except the relation a/D=1/2 to 1/4. However, setting of a distance a/D=1/2 to ¼ is simply a rearranging part or optimizing a value of a result effective variables. It is again mentioned that it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272,205 USPQ 215 (CCPA 1980). Also setting of the relation a/D=1/2 to ¼ is simply rearranging parts.

Since it has been held that rearranging parts of an invention involves only routine skill in the art. (See In re Japikse, 86 USPQ 70).

In view of the above and in view of the disclosure of Furubayashi, an ordinary skill of art is able to rearrange the configuration of Furubayashi and able to rearrange

the position of the fan with respect to the cooling coil as a/D=1/2 to ¼ and thus to generate air flow which will come from a side of the cooling chamber.

Therefore, the above rejections are ok.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MOHAMMAD M. ALI whose telephone number is (571)272-4806. The examiner can normally be reached on maxiflex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl J. Tyler can be reached on 571-272-4808. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Mohammad M Ali/
Primary Examiner, Art Unit 3744